ABSTRACT:

A wireless infrared communication system comprising of an optical transmitter and an optical receiver. The transmitter receives an optical signal through an optical fiber at a low infrared wavelength, amplifies this signal with Erbium Doped Amplifier (EDA) and inserts this signal to a non-linear crystal. A pump laser converts this signal to the mid infrared region and an infrared filter and lens transmit this signal to the receiver. The receiver is build from a receiving lens an infrared filter a non linear crystal to convert the mid infrared signal back to the low infrared region with a second pump laser, An EDA amplifies this signal and sends it to an optical fibber in the original low infrared wavelength for further transmission.

Due to this down and up wavelength conversion the wireless link is only slightly effected by adverse atmospheric conditions and will have an all weather operation option. The system does not need to convert the signal data to electronic signals, but serves as an all optical bridge in the atmosphere in regions where optical fibers don't exist.